Indian Health Service

FY 1995 Energy Report

November 21, 1995

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A. ANNUAL ENERGY MANAGEMENT DATA REPORT

In 1985, IHS reported a total consumption of 1,414,011 MMBtu at a rate of 186,095 Btu/GSF. By 1995, IHS facility engineers working with Engineering Services had reduced the rate to 163,049 Btu/GSF. This represents a 12 percent decrease which exceeds the 1995 reduction requirement of 10 percent!

This decrease can be attributed to better and more efficient designs of new construction and renovations, expansion of building automation systems, replacement of inefficient lighting, and better operation procedures.

I. Energy Consumption and Cost Data

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1995
PREPARED BY:	Adam Scully, P.E.	TITLE:	Staff Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 13, 1995

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost	Unit Cost ($)	Total MMBtu
Electricity	KWH	119,279,824	8,412,704	0.07 /kwh	406,983
Fuel Oil	Thous. Gal.	1,048,630	1,041,114	0.99 /gal	145,445
Natural Gas	Thous.Cu.Ft.	393,028	1,374,672	$3.50 / thCuFt	405,212
LPG/Propane	Thous. Gal.	1,320,532	666,771	0.50 /gal	126,111
TOTALS	---	---	11,495,261	---	1,083,750

Gross Square Feet	Btu/Gross Square Feet	$/Gross Square Feet
6,646,767	163,049	$1.73

Vehicles/Equipment

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)	Total Btu
Auto Gas	Thous. Gal.	376.6	470.8	1.25 /gal	47,078,737,000

II. Energy Conservation Program Summary

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1995
PREPARED BY:	Adam Scully, P.E.	TITLE:	Staff Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 13, 1995

DIRECT AGENCY EXPENDITURES

Direct expenditures on facility energy efficiency improvements

Annual Expenditures (Thous. $) Current Fiscal Year		686,300
Annual Expenditures (Thous. $) Next Fiscal Year		1,107,950
Annual savings anticipated from expenditures	77.4 MMBTU	770 (Thous. $)

ENERGY SAVINGS PERFORMANCE CONTRACTS

Number of ESP contracts awarded	None
Annual savings anticipated from ESP contracts	None

UTILITY INCENTIVES

Incentives received	$2.5	(Thous. $)
Funds spent in order to receive incentives	None	(Thous. $)
Annual savings anticipated from DSM activities	None	MMBTU

TRAINING

Current year expenditures for energy management training		50 (Thous. $)
Number of personnel trained	25	

SUMMARY OF ALTERNATIVE TRANSPORTATION FUEL USAGE

Vehicles (required by EPACT Sec. 308)

Number of dedicated alternative fuel vehicles	None	
Fuel consumed in dedicated AFVs	0	(Thous. GEG)
Number of dual-fuel alternative fuel vehicles	None	
Fuel consumed in dual-fuel AFVs	0	(Thous. GEG)

Fuel (required by EPACT Sec. 303)

		Annual Consumption	Annual Cost (Thous. $)
Biodiesel	Thous. Gal.	None	
Electric	KWH	None	
Ethanol	Thous. GEG	None	
Hydrogen	Thous. GEG	None	
Liquified Petroleum Gas (LPG)	Thous. GEG	None	
Methanol	Thous. GEG	None	
Natural Gas (CNG or LNG)	Thous. GEG	None	
Other	Thous. GEG	None	

B. ENERGY CONSUMPTION REDUCTION GOALS

The Indian Health Service (IHS) physical plant consists of over 2,000 buildings located at some of the most remote areas of the United States. In 1995 the IHS spent $11,495,000 on energy for its leased and owned facilities.

The IHS annual energy consumption goals are consistent with the Energy Policy Act of 1992 and Executive Order 12902. Our goals are to reduce energy consumption 10 percent by year 1995, 20 percent by year 2000, and 30 percent by year 2005. These reduction goals are based on 1985 energy consumption data.

C. ENERGY SAVINGS PERFORMANCE CONTRACTS

At the present time IHS does not have specific performance contracting commitments. The HFAC committee will be reviewing Energy Savings Performance Contracting (ESPC) to decide if this contracting mechanism will be adopted by IHS.

The Aberdeen Area is considering performance contracting to accomplish energy conservation projects in FY 1997 and in addition is considering joining the EPA Green Lights Program to implement lighting retrofit projects in FY 1996.

The Oklahoma Area Facilities Engineer attended a July course in Dallas, Texas titled "Successful Energy Savings Performance Contracting". Upon returning from this course, he attempted to get this ESPC program implemented on a project to retrofit lighting at a hospital by replacing T12 bulbs and magnetic ballasts with T8 bulbs and electronic ballasts. However, the short time frame to implement the technical and contractual aspects of this project created a reluctance from all entities involved to proceed any further. Procedures to verify anticipated and actual energy and cost savings were discussed but not pursued since it was decided an ESPC would not be used. The main problem encountered in the Area's attempt to enter into an ESPC was that they felt that the time that would be extended by government personnel learning how to accomplish this, was not worth the benefit that would have been derived on the lighting retrofit project.

D. ENERGY EFFICIENCY AND WATER CONSERVATION PROJECT FUNDING

Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects.

The Aberdeen Area has received $23,500 from the Department of Energy to conduct "Save Energy Surveys" at four locations in FY 1995. A disputed contract award delayed completion of the surveys until FY 1996.

The Oklahoma Area has implemented an off-peak thermal storage system at a hospital that involved financial incentives from a utility company. The Deputy Area Facilities Engineer was granted a $2,500 engineering award from Oklahoma Gas & Electric for a study to determine if this project would be mutually beneficial for IHS & OG&E. The study was performed by the Benham Group and estimated a payback period of 4.8 years for IHS with an offer of a contribution from OG&E of $53,000. This project would have involved producing chilled water at night when electrical rates were lower and storing it in the ground for use during off peak periods. The existing control system at Ada would have been analyzed during the design phase so that the absorption chiller would have been used as the lead chiller instead of the two centrifugals. The electrical consumption of the facility would have been slightly reduced by taking advantage of lower ambient condenser temperatures at night and by installing primary/secondary pumping. This project was not pursued past this initiation point because the design engineers and project managers thought that our true payback time would have been almost twice the Benham estimate due to IHS mandated set-aside contracts.

E. ENERGY AND WATER SURVEYS AND AUDITS

Both NECPA and EO 12902 require Federal agencies to perform energy and water surveys and audits. EO 12902 details the requirement by specifying prioritization surveys and comprehensive facility audits and by mandating all facilities to be audited within ten years.

I. Prioritization Survey

The Oklahoma Area's methodology to conduct prioritization surveys was based upon determining which facilities had the highest energy use per square foot and ranking them accordingly. The percentage of building stock included in the surveys was approximate 75%.

The Portland Area completed preliminary energy audit questionnaires at each service unit in the Area. All IHS owned facilities were included in the survey. The survey collected data reflective of the overall facility information and major energy using systems/equipment.

II. Comprehensive Facility Audit

The Bemidji Area will complete comprehensive facility audits in fiscal year 1996 for all Bemidji Area facilities. A comprehensive facility audit will be conducted at the new White Earth Health Clinic after one year of operation. The facility should open in the fall of 1997. Audits will be conducted by the Indian Health Service Engineering Services, Seattle, and by Indian Health Service, Division of Facilities

Management.

The Oklahoma Area plans to complete a comprehensive facility audits at the Claremore Indian Hospital - They plan to conduct a thorough energy audit in FY 1996 of this facility upon completion of the HVAC & lighting renovation project. The Oklahoma Area's previous prioritization list will be updated and utilized so that other facilities will be audited as time and funding permit in the next few years.

The Aberdeen Area has completed energy audits at the eight of fifteen major Area facilities. These eight audits comprise 60% of the square footage of the fifteen major Area facilities. Four additional energy audits will be completed during FY 1996 and the remaining three of the fifteen major facilities during FY 1997. Plans for implementing justifiable Energy Conservation Measures identified in comprehensive energy audits will be prepared within 180 days (resources permitting) of receipt of energy audit reports.

The Portland Area submits the following status table which describes their energy auditing program:

INSTALLATION NAME/NUMBER	USE	ENERGY AUDIT?	YEAR OF AUDIT	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY
Colville Service Unit 11551	HCTR	Yes	1986	Initial Report Not on File. Facility to be resurveyed in FY 1996.
Fort Hall Service Unit 11491	HCTR	No	1990	New Facility designed to current energy standards.
Fort Hall Service Unit 11491	HCTR	Yes L.A. Olson	1994	Analysis of Energy Usage (to confirm 1990 design).
No. Idaho Service Unit 20944	HCTR	Yes	1986	Report not on file, audit will be reaccomplished in FY 1997.
NW Wash. Service Unit 37567	HCTR	Yes Kerner/Fis her	1992	Comprehensive Audit.
Puget Sound (Dental Units)	DSTA	No		Facilities are being replaced (FY1995/96) with units to current standards.
Puyallup service Unit35776	HCTR	No	1992	New facility designed to current energy standards.
Taholah Service Unit 20611	HCTR	Yes Kerner/Fis her	1992	Comprehensive Audit.

Warm Springs Service Unit 11542	HCTR	Yes Anderson	1986	Audit (Old Health Center).
Wellpinit Service Unit 11553	HCTR	Yes Anderson	1986	Audit
W. Oregon Service Unit 11540	HCTR	Yes Pacific Architects	1992	Comprehensive audit.
Yakama Service Unit 19712	HCTR	Yes Anderson	1987	Energy analysis of new construction. COMPLETED
Yakama Service Unit 19712	HCTR	Yes L.A. Olson	1994	Analysis of energy usage in the old facility. COMPLETED
Warm Springs Service Units 11542	HCTR		1992	New facilities designed to current energy standards.

NOTES:1. PRELIMINARY ENERGY AUDITS WERE COMPLETED AT ALL LOCATIONS IN THE PORTLAND AREA BY SEPTEMBER, 1995

2. THE PRELIMINARY AUDITS WILL BE USED TO DETERMINE WHICH LOCATIONS WILL RECEIVE COMPREHENSIVE AUDITS THIS YEAR.

Summary of the Portland Area Energy Audits

Number of Locations:	14
Energy Audits within last 3 years:	3
Percentage of all facilities with Energy Audits:	55%
Number of New Facilities designed to Energy Standards (within the last 3 years):	4
Total Percentage of Facilities with recent audits and/or new facilities designed to standards:	85%

III. Leased Facilities

The Bemidji Area leases one facility, the White Earth Health Clinic, from the White Earth Band of Chippewa Indians. The clinic space is located in the White Earth Band headquarters building. The tribe provides operation, maintenance, and all utilities as part of the lease. Energy use at the clinic is not measured by the owner, and cannot be separated from the total building energy use.

The Oklahoma Area has recently installed new air conditioning units with economizers at White Eagle, Wewoka, & Miami, which are leased facilities. There is no planned procedure for completing energy and water audits in buildings with full service leases due to the language in the these leases that impede their office from pursuing this.

F. IMPLEMENTATION OF ENERGY EFFICIENCY AND WATER CONSERVATION PROJECTS

The Bemidji Area has completed the following projects at White Earth Service Unit:

1. Naytahwaush Health Clinic: Insulation of crawl space and exterior walls.
2. Ponsford Health Clinic: Insulation of crawl space and exterior walls.

The Oklahoma Area completed two new audits this past fiscal year. One was conducted at the W. W. Hastings Indian Hospital by Oklahoma State University graduate students with the assistance of Mr. Scully from IHS-HQ. Another similar audit was conducted at the Lawton Indian Hospital by Oklahoma State University graduate students that was initiated by the Area Office. Projects initiated as a result of these audits are as follows:

1. Expand Implementation of Night Setback
2. Insulate Steam Lines and Fittings
3. Replace Stairwell Lighting
4. Reduce Boiler Combustion air
5. Retrofit Exit signs
6. Replace Outside Lighting
7. Install Occupancy sensors
8. Replace Pharmacy Lighting
9. Delamp Hallway Fixtures

The Oklahoma Area office will assist the facility manager in coordinating the implementation of the light bulb & ballast retrofit project, that came from the energy survey at Tahlequah, this fiscal year. They will submit a project to replace stairwell lighting, exit signs, outside lighting, pharmacy lighting and delamp hallway fixtures, that came from the energy survey at Lawton, this fiscal year.

The Portland Area supports energy conservation in both federal and tribal owned facilities. The following is a list of energy conservation projects implemented during FY 1995:

1. Colville - PD0CO426C6 - phase II of this project replaces two out-dated electric (pre 1968) boilers with new energy efficient boilers, new energy efficient lighting, all new windows, and a new suspended ceiling was installed which will reduce the volume of conditioned space.

2. Neah Bay - PO4TA004C6 - This project provided crawlspace insulation and energy efficient windows for the Taholah Indian Health Center.

3. Yakama - The local electrical utility performed a

electrical systems energy audit. No recommendations had a ten year payback or less.

4. Indian Tribal Consortium - The ITC Youth Residential Treatment Center, Spokane, was constructed to adhere to the most recent new energy efficiency and water reduction guidelines.

5. Northern Idaho - PO4NI006C6 - This project commenced to provide new energy efficient HVAC units for the main level zone and basement level zone of the Lapwai Indian Health Center in Lapwai, Idaho. New energy efficient lighting is being installed in the basement.

6. Wellpinit - PO4WE006C6 - This project was advertised for bid to provide new energy efficient HVAC units for the main level zone and basement level zone of the David C. Wynecoop Memorial Health Center in Wellpinit, Washington. New energy efficient lighting is being installed in the basement.

7. Fort Hall A/SAP (Residential) - Fort Hall, Idaho - This repair project was funded to replace HVAC units and upgrade perimeter insulation.

8. Nanitch-Sahallie A/SAP (Residential) - Salem, Oregon - This project was funded to replace very obsolete and inefficient HVAC units and upgrade lighting to current standards.

9. Puyallup A/SAP (Residential) - Tacoma, Washington - New replacement high energy efficient boilers and associated control systems were installed.

10. Yakama A/SAP (Residential) - Toppenish, Washington - This project was funded to replace obsolete HVAC units and add proper roof insulation.

G. SOLAR AND OTHER RENEWABLE ENERGY

The Oklahoma Area replaced deteriorated insulation on the piping for 144 solar collectors that provide 90% of the energy to heat domestic hot water at Tahlequah.

H. MINIMIZATION OF PETROLEUM-BASED FUEL USE

Projects to minimize petroleum-based fuel use have not been implemented in IHS, other than energy conservation projects which result in less fuel use. Such projects will be considered in energy audits for each facility.

I. ENERGY EFFICIENT OPERATIONS AND MAINTENANCE PROCEDURES

The Bemidji Area has accomplished the following actions to reduce energy consumption:

Facility	Action
Red Lake Hospital	Reduce temperatures or turn off HVAC to unoccupied areas overnight and weekends.
	Use timers to regulate operation of exhaust fans and vehicle heaters.
Naytahwaush Health	Reduce temperatures or turn off HVAC to unoccupied areas overnight and weekends.
Ponsford Health	Reduce temperatures or turn off HVAC to unoccupied areas overnight and weekends.

The Oklahoma Area has installed programmable thermostats in health center at Miami, White Eagle, & Wewoka. The staff has been trained how to apply adaptive intelligent recovery to operate these thermostats to avoid conditioning space during unoccupied times. The demand meter at Lawton will be tied into the existing CSI control system this year to track and minimize demand charges at this facility.

The Billings Area uses direct digital controls to set back HVAC operations during off hours and use outside air for cooling on a macro basis. High efficiency lamps are used for lighting at some locations. The clinic at Wolf Point monitors and adjusts boiler efficiency monthly. An HVAC service contract is used to make minor adjustments to equipment. Insulation is added to ceilings where possible. High efficiency boiler and furnaces are used to replace old equipment. Buildings are regularly inspected for weather strip and window improvement.

The Tucson Area replaced thermostats and controls with automatic time-setback models to conserve energy where feasible; the use of motion detectors in some rooms (such as conference rooms) is being investigated. Water-saving valves are replacing less efficient ones as the older ones wear out. As equipment is replaced, more energy efficient replacements are specified. The use of outdoor air is used for free cooling when the air temperature allows and when the ventilation requirements for healthcare spaces are not violated. As lighting is replaced, more efficient lamps and ballasts are specified.

J. ENERGY EFFICIENCY IN NEW SPACE

The Code of Federal Regulations (CFR)436 and CFR 435 (or state codes, whichever are more stringent), are used to ensure that designs of new buildings incorporate life-cycle cost methodologies. This applies to renovation of existing spaces.

There were no projects planned, under construction, or completed in FY 1995 which included passive solar design and active solar technologies.

The Bemidji Area began new construction of the White Earth Health Center in FY 1995. Facility design does not include solar or other renewable energy sources. Technologies and practices utilized for energy efficiency and water conservation were provided according to Headquarters, Indian Health Service policy.

The Portland Area the ITC Youth Residential Treatment Center Project number 989 is using new practices and products for energy efficiency and water conservation. The new facility will use community water and electricity as the energy source and commences initial operation in the first quarter of FY 1996

K. PERFORMANCE EVALUATIONS

Position descriptions and performance evaluations of facility managers, designers, energy managers, their superiors, and others critical to the implementation of EO 12902 do not specifically address energy efficiency, water conservation, and solar and other renewable energy projects. However, such actions are included in performance evaluations since they are normal to the positions.

L. INCENTIVE AWARDS

Except for awards and recognition from immediate supervisors, there are no incentive programs to reward exceptional performance in implementing the provisions of NECPA and EO 12902.

M. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS

Procurement of energy efficient products is a normal part of business. All personnel recommending and specifying products for procurement consider energy efficiency and cost savings in product selection.

N. ENERGY MANAGEMENT TRAINING

The IHS Energy Coordinator has developed a course for the Area Engineers and facility managers which covers the following topics:

a. Overview of Codes and Standards
b. Economics
c. Energy Audits/Instrumentation
d. Electrical System Utilization
e. Mechanical and HVAC systems
f. Utility & Process Systems Utilization (Processes)
g. Building Envelope
h. Cogeneration
i. Procurement of Fuel
j. Energy Management Systems
k. Control Strategies
l. Thermal Energy Storage
m. Lighting
n. Boiler & Incineration Plants
o. Maintenance Program

Fifty-two engineers, managers, and technicians have attended this course. In the past two years 12 people (engineers and technicians) have taken a four hour exam administered by the Association of Energy Engineers (AEE). Seven passed the exam and are now recognized by AEE as Certified Energy Managers (CEMs).

The Oklahoma Area scheduled Mr. Needham Smith, P.E., C.E.M., to present a four hour training session titled "Energy Management in Hospitals" in July of 1994 to all of our facility managers in the Oklahoma City Area. Ken McKenzie requested and assisted him in developing an outline for his presentation. Ken was able to acquire the services of Mr. Smith at no cost since he was an employee of the state here in Oklahoma City. Attendees found the information that he presented interesting and informative. Seven individuals from the Oklahoma City area attended the energy training course in Norman, Oklahoma this past summer that was sponsored by IHS-HQ. Ken McKenzie assisted Mr. Scully in developing a section of this course on procurement of fuels. Ken's section dealt with the current and future status of end-user wheeling of electricity and purchasing non-tariff natural gas on the spot market. According to Ken, "This aspect of energy management should be aggressively pursued by all Areas of IHS because I believe this has the highest probability of significantly reducing the costs, not the consumption, of procuring electricity and natural gas for all of our facilities by June of 1996 and implement any positive items that come from this evaluation. Although the consumption component of energy use obviously affects costs and should be examined, we should also place emphasis on reducing the cost of procuring these resources for the Indian population and the taxpayer."

O. ENVIRONMENTAL BENEFITS OF ENERGY MANAGEMENT ACTIVITIES

The Oklahoma Area has installed high efficiency purge units on 4 of our 6 centrifugal chillers that utilize R-11. A project has been initiated this year to evaluate our chillers to determine if they can be retrofitted with 123 or whether they should be replaced with new single effect or double effect direct fired absorption chillers. Utilizing the existing high pressure steam boilers as a heat course for chilling water will be investigated as well as the demand side management aspects of thermal storage. A retrofit lighting project is currently under construction at the Claremore Indian Hospital to replace inefficient bulbs and magnetic ballasts. We plan to determine if the ballasts contain PCB's or DEHP's and will consider the environmental benefits and the economics of properly disposing or incinerating ballasts if either of theses materials are found in the ballasts.

The Portland Area Office has instituted a chlorofluorocarbon (CFC) reduction program for heating ventilation and air-conditioning (HVAC) systems at several sites. An HVAC upgrade at Puyallup will eliminate the need for CFC gases in FY 1996.